DOOSAN Document Transmittal Upper Trishuli-1 HEP (216MW)		Date 2022-04-27	DT No.: UT1-HEP-DHI-PC-D-0026	SHEET 1 OF 1
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SUBJECT	Review Note RN-0115_Outline Drawing of Diversion Tunnel Lining			

S. N.	REVIEW NOTE NO.	REVIEW STATUS	DWG. / DOC. NO.	REV.	DWG. TITLE / DOC. DESCRIPTION	REMARK
1	RN-0115	RR	UT1-C-010-CVL-DG-42005	0B	Outline Drawing of Diversion Tunnel Lining	
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Legend of Review Status
A : APPROVED
AN : APPROVED AS NOTED
RR : RETURN FOR RESUBMISSION
FI : FOR INFORMATION

DHI STAMP

Doosan Heavy Industries & Construction Co. Ltd. DOOSAN Branch Office Nepal

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Discipline : Civil

UPPER TRISHULI-1 HEP (216MW)			
Client	**Nepal Water and Energy Development Company Private Limited**		
Owner's Engineer	**Tractebel Engineering GmbH / Jade Consult**		

REVIEW NOTE

Contractor	**Doosan Enerbility**		
Title of the Document	Outline Drawing of Diversion Tunnel Lining, sheets 1-3		
Document No.	UT1-C-010-CVL-DG-42005	Revision	0B
Date of Documents	14.04.2022	Received Date	20.04.2022
Transmittal Form No.	UT1-HEP-DHI-D-0209		
Previous Review Date/Status	30.03.2022/RR	Prev. Review Note No.	RN-0108
Review Note No.	**RN-0115**	**Present Review Date**	**27.04.2022**
		Present Review Status	**RR**

A: Approved AN: Approved as Noted RR: Returned for Resubmission FI: For Information, only.

General comments:

The document under review is part of the Design Optimization Proposal process.

Comments to RC-0034

1. Maximum block length/ construction joints as per Contract ANNEX 13, Part C 17.3.1 is accepted.

2. Concrete Plug design shall be considered as per drawings *UT1_C_CFDR_039 to _047, DKJV 2018 (approved binding basic design documents).*

3. Tunnel lining:
   A proof of the durability of the shotcrete at the tunnel roof as a permanent tunnel lining of the Diversion Tunnel with pressurized flow and high flow velocities has not been provided yet especially in regards of roughness and irregularity of shotcrete lining, refer to Contract annex 13-part c,1,15,1,9 (2) and definition as per sheet 2 of 3 of the document under this revision: F4.

4. Weep holes including PVC-tubes as per Contract ANNEX 13, PART C,1. Construction Specification,18.3.24 is accepted.

5. Lean concrete:
   Still no lean concrete is indicated in the documents under this revision. However as per request for inspection *RFI No. UT#1/NWEDC/DHI/PC/DT-I/IRSCL/007/0001, dated 17/03/2022,* lean concrete has been considered in the Diversion Tunnel.

   Weep holes bottom slab:
   Justification is missing, why weep holes in the bottom slab are not necessary.

Construction joints:
Showing the arrangement of the construction joints (or other joint types) in the respective method statement is acceptable. However, the method statement has to be revised regarding maximum spacing of construction joints, see also comment 1. above.
A typical detail of the joint sealings as per Contract ANNEX 13, Part C 17.1.1 shall be shown on the concrete outline drawing under this review.

Transition between shotcrete/ concrete lining:
Comment 3. shall be considered.

6. Pre-measures for plugging:
Concrete Plug design shall be considered as per *drawings UT1_C_CFDR_039 to _047, DKJV 2018 (approved binding basic design documents)*.

7. Typical cross section Diversion Tunnel Intake:
Cross section of Diversion Tunnel intake is shown in respective drawing which is acceptable.

Diversion Tunnel Outlet Structure:
The final design shall be considered in as *per UT1_C_DFDR_031, DKJV 2018 (approved binding basic design documents).* The respective detailed design (outline and reinforcement drawings) is still pending and shall be provided as an earliest.

8. It is not mentioned in which way the method statement will be revised.

9. The class of finish of the concrete surface is defined and indicated on sheet 2 of the outline drawings under this revision which is acceptable. This definition is applicable for sections D1 and D2 as well.

DISCLAIMER
Any approval will not release the Contractor from any of his obligations under the Contract.

Sebastian Beck, Chief Design Engineer